EPA-ERT/SERAS
WORK LOCATION HEALTH AND SAFETY PLAN

Prepared by: Peter Harnett/Rick Leuser

SERAS HSO Approval: Peter B. Harnett
Date: September 14, 2015

1.0 INTRODUCTION

Site Name: Wilcox Refinery & Tank Farm Site WA#: SERAS-0277

Original Safety Plan: Yes ☒ No ☐ Modification No.: Revision to July 20, 2015 HASP, MOD 1

Location: Street address 34498 E0810 Road

City: Bristow County: Creek

State: Oklahoma Zip Code: 74010

Site Contacts: Chris French Site Phones: 732 796-3247
Beth Williams 717-649-5291

Directions to Site: Directions with map to the site are provided as Attachment 1 and site maps are provided as Attachment 2. Directions and map to the nearest hospital are provided as Attachment 3.

1.1 Site/Incident Description

A.	Urban:	☐	Residential:	☐	Commercial:	☐
	Industrial:	☒	Rural:	☒	Remote:	☒
	Active	☐	Inactive	☒	Landfill	☐
B.	Spill:	☐	Air Release:	☐	Fire:	☐
	HW Site:	☒	Other:	☐		

C. Containers involved? To be determined (TBD).
Drums: TBD
Tanks: Not fully determined, but approximately 5 were already observed onsite.

D. Site size: 125 Acres

Terrain: Wooded, fields Weather: September, hot temperatures expected.

E. Are Regional STARTs Onsite? ☐Yes ☒No

1.2 Site History Summary:

The site consists of the former Lorraine/Wilcox Refinery located near Bristow, Oklahoma. The site was utilized by two different refineries with overlapping boundaries from 1915 to 1965. Wilcox operated as a crude oil refinery from the 1920s until 1963. A skimming and cracking plant was constructed in 1929. The main components of the plant consisted of skimming plant, cracking unit, and re-distillation battery with vapor recovery system and treatment equipment. Wilcox expanded when it acquired the Lorraine Refinery in 1937, which was located adjacent to Wilcox.

The two refineries compromise approximately 125 acres. The site includes remnants of former oil refining operations and tank farms.

Multiple sampling events have been conducted by Oklahoma DEQ at the request of EPA Region 6. Preliminary Assessment, site inspection and Expanded Site Inspection were performed on both the refinery area and tank farm. Available information indicates that polyaromatic hydrocarbons (PAHs) and several heavy metals are among the known onsite contaminants. A recent report indicated that a child living on the site has elevated blood lead levels. At the present time, the source of lead leading to the elevated lead level is not known. At present, little information is known about petroleum hydrocarbons onsite- but they are expected particularly in the subsurface.

On December 12, 2013 the Wilcox Oil Company Site became a Superfund Site with EPA ID#OK0001010917

1.3 Background Information Sources (Report Titles, Names and Dates):

Wilcox Oil Refinery Superfund Site HRIS Document Record, USEPA, May, 2013

Wilcox Oil Company Superfund Site Handout, Oklahoma DEQ, January 2014

1.4 Scope of Work: Initial site reconnaissance to determine how best to approach future phases of the work. Additional site work to include: Geophysical Investigation, a CPT Subsurface Investigation and sampling and analysis. The specific work will be determined based on the results of the site reconnaissance.

A.

Emergency Response	☐	Air Sampling	☐	Bioassessment	☐
Contractor Oversight	☐	Treatability Study	☐	Soil Gas Sampling	☐
Geophysical Monitoring	☒	Well Sampling	☐	Flux Chamber Sampling	☐
Well Installation	☒	Soil Sampling	☒	Wipe Sampling	☐
Drum Sampling	☐	Bulk Sampling	☐	Geophysical Survey	☒
Lagoon Sampling	☐	Sediment Sampling	☐	Surface Water Sampling	☐
		Walk through Assessment	☒		

B. Task Description: Task 1 is a walkthrough assessment of the site.
Date of Activity: July 20-24, 2015

Task 2: Mobilize, establish field office, port-a-johns, and equipment (small excavator, bush hog, two John Deere 4 x 4 Gators, geophysical equipment)
Date of Activity: September 14, 2015 start, excavation work and bush hog work will continue during Task 3.

Task 3: Geophysical surveys using ground penetrating radar (GPR), EM 31, EM 61.
September 15 to September 25.

Task 4: Cone Penetrometry and Geoprobe
Dates: Estimated start date of mid-October. Duration may be up to three weeks. The cone penetrometer (CPT) and Geoprobe will be operated by subcontractors.

Task 5: Soil and ground water sampling and analysis.
Dates: Not estimated at present.

2.0 PERSONNEL

EPA Remedial Project Manager:	Katrina Higgins-Coltrain
ERT Work Assignment Manager: ERT Work Assignment Manager, geophysics subtask	Tom Kady George Prince
SERAS Task Leader:	Richard Leuser (Task 1-5)
SERAS /Field Supervisor/Site Safety Coordinator	Beth Williams (Task 1) Chris French (Tasks 2-5)
SERAS Site Safety Coordinator:	B. Williams (Task1 and Geophysics activities) Chris French (Tasks 2-5)

Subcontractor (future):
Cone Penetrometry

Name: ConeTec, Inc.,
Address: Salt Lake City, Utah
Phone: 801-973-3801

Name: Fugro Consultants, Inc.
Address: Houston, Texas
Phone: 713-369-5400

Geophysics

Name: AMO Environmental Decisions
Address: 4327 Point Pleasant Pike
Danboro, PA
Phone: 215-230-8282

Geoprobing: Not determined.

3.0 TASKS/OPERATION SAFETY AND HEALTH RISK ANALYSIS

3.1 Chemical/Exposure Hazards

Inhalation	☒	Ingestion	☒	Skin contact	☒
Biological	☐	Explosive	☐	Pressure sensitive	☐
Radioactive	☐	Flammable	☐	Water Reactive	☐

3.2 Physical Hazards and Potential Physical Concerns (Additional information on each is provided in Table 3.3.1 below.)

Heat	☒	Scaffolds	☐	Excavations/trenches	☒
Noise	☐	Weights/lifting	☐	Underground utilities	☐
Cold	☐	Pressured air	☐	Compressed gases	☐
Boating	☐	Overhead hazard	☐	Unguarded floor opening/lagoons	☐
Ladders	☐	Building entry	☐	Heavy machinery	☒
Snow	☐	Vehicular traffic	☐	Electrical storms	☒
Rain	☒	Working over water	☐	Heavy manual lifting/moving	☐
Housekeeping	☐	Electroshocking	☐	Biological	☒
Neighborhood	☐	Slips, trips, falls	☒	Brush hog	☒
Snakes	☒	Biological*	☒		

* Snakes were moved into separate category from biological due to additional information contained in HASP Attachment 4.

Confined space: Not applicable.

3.3 Tables in Section 3.3 on the following pages provide a summary of biological and physical hazards that could potentially be encountered by personnel during each task. Chemical Exposures are expected to be below the Action Level.

TABLE 3.3.1

TASK RISK ANALYSIS: CHEMICAL HAZARDS OF CONCERN

Contaminant/ CAS number	**Exposure Limits**	**Source/ Concentration**	**Routes of Exposure**	**Symptoms of Acute Exposure**	**Monitoring Device (Response Factor)**
Lead CAS 7439-92-1	OSHA PEL: 0.05 mg/m3 - TWA ACGIH TLV: 0.05 mg/m3 - TWA NIOSH IDLH:100 mg/m3 (as Pb) Listed Human Carcinogen: (Agency: Class) EPA-Probable IARC-Possibly NTP-Reasonably anticipated	Soil/ concentration not identified using public resources as of walkthrough.	Inhalation, Dermal absorption, Incidental ingestion.	Sufficient exposure to lead may result in weakness, lassitude, insomnia, facial pallor, abdominal pain, colic (gaseous discomfort), darkened gum line, tremors, wrist and ankle drop, long term degeneration of the brain and disease of the kidney. Lead affects the eyes, gastrointestinal tract, central nervous system, kidneys, blood, and gum tissue.	DataRAM (100%)
Coal Tar Pitch Volatiles, Coal tar pitch; Oil pitch; Pitch; CTPV; Coal tar distillates, including; Pyrene, Phenanthrene, Chrysene, Anthracene, Benzo(a)pyrene. CAS 65996-93-2	OSHA PEL: 0.2mg/m3-TWA, ACGIH TLV: 0.2mg/m3-TWA , NIOSH IDLH: 80mg/m3, Listed Human Carcinogen: (Agency: Class IARC-Known-Group 1,	Soil/ concentration not identified using public resources as of walkthrough.	Inhalation, Dermal absorption, Incidental ingestion.	Sufficient exposure may result in dermatitis, and bronchitis. Coal tar pitch volatiles affect the Respiratory system, skin, bladder, and kidneys, and is associated with lung, kidney and skin cancer.	DataRAM (100%) .

	NTP-Known carcinogens				
Volatile organic compounds (VOCs)- no specific VOCs identified	ND	No data located on concentrations in soil or groundwater.	Inhalation, Dermal absorption, Incidental ingestion.	Specific VOCs not identified, but petroleum hydrocarbons are likely present in subsurface.	MultiRAE will be equipped with 10.6eV bulb. Additionally, sensors for "total VOCs," hydrogen sulfide, oxygen and LEL are included

Note: At the current time subsurface soil petroleum hydrocarbons have not been adequately characterized. As additional information becomes available, this will be added to table above and may result in additional need for equipment for air sampling/air monitoring onsite.

Legend

ACGIH: American Conference of Governmental Industrial Hygienists

OSHA: Occupational Safety and Health Administration

PEL: Permissible Exposure Limit (8-hr Time Weighted Average airborne concentration enforced by the Occupational Safety and Health Administration (OSHA), see 1910.1000, Final Rule, Tables Z-1, Z-2 and Z-3)

American Conference of Governmental Industrial Hygienists (ACGIH), 2015-Threshold Limit Values for Chemical and Physical Agents and Biological Exposure Indices)

TLV: Threshold Limit Values 8-hour Time Weighted Average (TWA) airborne concentration that should not be exceeded during the workday based on a 40-hour work week.

NIOSH: National Institute for Occupational Safety and Health

IDLH: Immediately Dangerous to Life or Health, Escape concentration limit designed to ensure that a "worker could escape without injury or irreversible health effects within 30 minute period in the event of the failure of respiratory protection equipment.

mg/m^3: milligrams per cubic meter air.

RAM: real-time aerosol monitor.

IARC: International Agency for Research on Cancer.

NTP: National Toxicology Program.

TABLE 3.3.2
TASK RISK ANALYSIS: PHYSICAL HAZARDS OF CONCERN

PHYSICAL HAZARD	TASKS	EXPOSURE CONTROL PROCEDURES
Heat	1-5	• Prevention protocol and biological monitoring will be instituted at temperatures exceeding 70F. • Physiological monitoring will be conducted in accordance with the attached Tables 3.3.4 and 3.3.5. • Work/Rest cycles will be instituted based on physiological monitoring

PHYSICAL HAZARD	TASKS	EXPOSURE CONTROL PROCEDURES
		• Personnel should consume 16ozs of water prior to beginning work and at intervals (breaks, lunch) throughout the day • Non-caffeinated liquids (water, electrolyte drinks, juice kept at 50-60F) will be maintained on-site throughout the work shift. • Signs of Heat Exhaustion and Stroke will be reviewed (attached), employees will monitor fellow field team members for observance of these signs.
Rain	1-5	• May increase risk of hypothermia, see hazard preventions listed in the "Cold" Section of this Table. • Rain repellant outer gear should be worn by employees. An additional change of clothing should be maintained for removal and replacement of wet clothing. • Rest breaks shall be taken in a warm, sheltered area (van, trailer, nearby commercial space). • Work areas where water may accumulate and create additional slip/trip/fall hazards should be provided with drainage or barriers. • Employees should maintain and increase awareness of their physical surrounding, particularly when operating or when working around heavy equipment.
Snakes	1-5	Snakes typically are found in underbrush and tall grassy areas. Use care when reaching into or moving objects, be familiar with habits and habitats of snake indigenous to area, wear ankle high or higher steel-toe/shank boots, chaps as appropriate, and clear grass/overgrown areas when possible. If a snake is encountered, stay calm and look around; there may be other snakes. Turn around and walk away on the same path used to approach the area. If a person is bitten by a snake, wash and immobilize the injured area, keeping it lower than the heart if possible. DO NOT apply ice, cut the wound, or apply a tourniquet. Try to identify the type of snake: note color, size, patterns, and markings. The 3 most common poisonous snakes in the immediate area are: pygmy rattlesnake, cotton mouth (water moccasin), and copperhead. Photographs of each of these snake types and some limited information on each is provided in Attachment 4.
Slips, trips, falls	1-5	Observe the following procedures and practices to prevent slips, trips, and falls: • Inspect each work area for slip/trip/fall potential prior to each work task. • Slip/trip/fall hazards identified must be communicated to all personnel. Hazards identified will be corrected or labeled with warning signs to be avoided. • All personnel must be aware of their surroundings and maintain constant communication with each other at all times.
Heavy machinery	2-4	Brush hog, excavator, and two Gators are among the heavy machinery used onsite. Do not approach the operator(s) of any of these vehicles without first getting clear hand communication to do so. If contact by cell phone or radio is possible, this is the preferred first method for contact especially if equipment is not operational. All heavy machinery must be turned off, key removed, all systems non-active (negative energy state). For example, no work can be done on brush hog unless it is turned off, key removed, deck rests on ground, and no rotation of power take-off (PTO). Brush hog, excavator, and Gators will be operated in a manner consistent with manufacturer's and dealer's instructions. Care will be taken to only operate equipment on acceptable grades/slopes as provided in operating instructions. Stay at least 10-feet away from the path of operation for this equipment. If approaching a small excavation, approach it from the top where excavator bucket first digs in. Remain 3 or more feet from the edge of the excavation. Do not enter any excavation whether surficial or

PHYSICAL HAZARD	TASKS	EXPOSURE CONTROL PROCEDURES
		4-feet in depth. **No excavations will be made beyond 4-feet in-depth. If a special reason develops to do so, the Task Leader and EHS Manager must be notified. If permission is granted, the excavation needs to be closed up shortly after completion and no one may approach with 6-feet of hole.**
Vehicular Travel	1-5	• All drivers must be appropriately licensed when operating a vehicle. • All traffic rules and regulations, and all traffic control signs and devices should be followed. • Drivers of rental or unfamiliar vehicles should become familiar with all controls before operating the vehicle. • Drivers should operate vehicles defensively, exercise special care when operating on unfamiliar roads or during inclement weather, and should yield to pedestrians. • Trucks should be backed under the direction of a signal person when operator cannot view rear area clearly. • Seat belts should be provided and used by each individual in the vehicle. • Personnel must not ride on outside or back of vehicles. • Materials should be loaded within limits of vehicle weight capacity, should be secured and should not protrude from rear of truck. • Personnel may not remain in or on vehicles being loaded by excavating equipment unless cab is adequately protected against impact. • Maintain road flares, fire extinguishers, first aid kits and other safety equipment where necessary.
Housekeeping	1-5	• Provide adequate storage space for site equipment and supplies. • Assign time and responsibilities for daily clean-up prior to departure from site. • Ensure lunch areas are maintained free of empty bottle, containers and paper. Provide trash receptacles with enclosed tops/covers in the designated lunch area and throughout site as necessary. • Do not accumulate flammable or combustible liquids on floors, walls, etc. Spill must be cleaned immediately. • Provide adequate lighting in and around all work areas, passageways, stairs and ladders. Keep all such areas clear of debris, supplies and any other objects. • Mark and/or secure any object (extension cord) which must traverse a passageway. • Ensure that supplies are stored in neat stockpiles and that access aisles are created and kept clear of stored objects. • Remove combustible materials routinely, do not allow accumulation in areas where flammable and combustible liquids are stored, handled or processed.
Neighborhood	1-5	• Hazards associated with neighborhoods arise as a result of; socio-economic factors; client/resident relationship; client/labors relationship; physical design factors (lighting, secured barriers, remote location); value of equipment and materials; benefits of sample tampering. • Ensure adequate site security provided for on-going activities. Site security may be provided by client, or may need to be contracted by SERAS personnel. Enforcement of security functions should be assigned to properly trained and authorized individuals. • Avoid verbal and physical confrontation. • Ensure SERAS personnel work in teams or groups when accessing and conducting activities in sensitive locations. Establish a communication procedure for obtaining on and off site assistance. • Provide adequate communication devices (mobile phones or radios) for teams working in sensitive locations. • Provide visible security precautions (fencing, “keep out” signs). Provide locked storage facilities on-site; construct adequate barriers for equipment or sampling devises which will remain unattended at off-site or unsecured site locations. • Use discretion in discussion related to site work when conversing off-site and off-hours.

PHYSICAL HAZARD	TASKS	EXPOSURE CONTROL PROCEDURES
Electrical Storms	1-5	• At the first sign of lightning cease work, seek enclosed shelter. Work will not resume outside until 30 minutes after the last sight of lightning.
Biological – wild animals, poisonous plants	1-5	• Hazards include bites from infected wild animals; rodents; insects/spiders and contact with poisonous plants. Observe the following general procedures and practices regarding insects/spiders: • Tuck pants into socks • Wear long sleeves • Use insect repellent • Avoid contact by always looking ahead to where you will be walking, standing, sitting, leaning, grabbing, lifting, or reaching • Check for signs of insect/spider bites, such as redness, swelling, and flu-like symptoms The most dangerous spiders to humans in the US are black widows and brown recluse. • Wild animals: avoid contact with wild/stray animals, be weary of nocturnal animals seen during the day, eliminate food sources and nesting sites, store trash/garbage in metal/thick plastic lidded containers, cut grass/underbrush where possible. • Ticks: same as those for insect, tuck pant leg into socks and boots, conduct tick checks during breaks and at end of shift, wear light colored clothing, remove and save tick immediately. • Plants: Wear long sleeves/pants, use barrier creams if highly sensitive, do not contact plants which resemble poison ivy (3-leaves, pointed leaf), oak (3-leaves, rounded leaf), or sumac (paired leaves, white fruit). • Blood borne Pathogen hazards and controls are identified in Lockheed Martin's Exposure Control Plan, training is conducted annually.

TABLE 3.3.3
TEMPERATURE EXTREMES: SIGNS OF EXCESSIVE EXPOSURE

Temperature Extremes	Sign/Symptom of Excessive Exposure
Heat Exhaustion	State of weakness or exhaustion caused by the loss of fluids form the body: Pale, clammy, moist skin; profuse perspiration and extreme weakness; body temperature may be normal; weak/rapid pulse; shallow breath. **Treatment:** Remove individual to cool, air-conditioned, or temperature controlled area; loosen clothing; place in head-low position; provide rest. Have patient drink 1-2 cups of water immediately, and every 20 minutes until symptoms subside.
Heat Stroke	Acute, dangerous reaction to heat stress caused by failure of body's heat regulating mechanisms resulting in a rapid rise in body temperature, brain damage, and death: red, hot, dry skin; confusion; extremely high body temperature; rapid respiratory and pulse rate; unconsciousness or coma. **Treatment:** Remove from heat source and cool victim rapidly by soaking victim in cool (NOT COLD) water; sponge body with cool water to reduce temperature to safe level (<102F) Monitor vital signs, obtain immediate medical help.
Heat Cramps	Acute painful spasms of voluntary muscles caused by inadequate electrolyte intake: muscle spasms, most notably the abdomen and extremities. **Treatment:** Remove victim to cool area and loosen clothing.

TABLE 3.3.4

PERCENT SUNSHINE FACTORS HEAT STRESS PREVENTION AND MONITORING		
Percent Sunshine (%)*	Sunshine Factor	Adjusted Temperature Calculation@
100	1	Air Temp + 13(1) = **Adjusted Temp**
50	0.5	Air Temp + 13(0.5) = **Adjusted Temp**
0	0	Air Temp + 13(0) = **Adjusted Temp**

*Linear Scale, any estimated percent sunshine divided by 100 will provide the corresponding Sunshine.

@Calculation: Air Temperature (in degrees F) + 13(Sunshine Factor)=Adjusted Temperature.

TABLE 3.3.5

PHYSIOLOGICAL MONITORING SCHEDULE HEAT STRESS PREVENTION AND MONITORING		
Adjusted Temperature (Table 3.3.4)	Monitoring Schedule **Level D** (Permeable Clothing)	Monitoring Schedule **Level C, B or A** (Impermeable Clothing)
90 ºF or above	After each 45 minutes of work	After each 15 minutes of work
87.5ºF-90ºF	After each 60 minutes of work	After each 30 minutes of work
82.5ºF-87.5ºF	After each 90 minutes of work	After each 60 minutes of work
77.5ºF-82.5ºF	After each 120 minutes of work	After each 90 minutes of work

Heat stress concerns will be minimized through several site measures. Employees will have regular access to an air conditioned vehicle. Cool drinks including water and sugar/salt supplemented drinks will be provided to employees, and all employees performing any extended (more than 20-minutes) field activity in the sun will have nearby access to a walk-in tent/canopy cover or equivalent.

Physiological monitoring will be performed as necessary to compliment the measures above. Body temperature will be measured by using an ear thermometer and will be compared with baseline (temperature prior to work). If there are any clear signs of heat stress- excessive sweating, mental confusion, lack of coordination then body temperature and one minute pulse readings will be measured. The table above will serve as guidance for the overall heat stress program onsite.

Physiological monitoring should include **oral temperatures** and/or **pulse rates**. Physiological monitoring should be conducted at the beginning of each rest period, the frequency of which is specified above.

Oral Temperature Criteria: An oral temperature in excess of 99.6 degrees (or 1 degree above individuals' baseline) will require that the next work period be reduced by 33%. This shall continue until the body temperature is maintained below 99.6 degrees (or 1 degree above baseline).

Pulse Rate Criteria: Heart rate should be measured by the radial pulse for 30 seconds. If the heart rate exceeds 110 beats/minute at the beginning of the rest period the next work period should be reduced by 33%.

4.0 PERSONNEL TRAINING REQUIREMENTS

Consistent with OSHA's 29 CFR 1910.120 regulation covering Hazardous Waste Operations and Emergency Response, all site personnel will be compliant with training requirements. At a minimum, all personnel will be trained to recognize the hazards on-site, the provisions of this HASP, and personnel responsible for safety at this site.

4.1 Site Specific Training Topics

The following topics will be discussed by the SERAS field team leader prior to commencement of onsite activities:

Site Hazards ☒ Emergency Procedures ☒ (Tables in Section 3.3) ☒

5.0 PERSONNEL PROTECTIVE EQUIPMENT

5.1 Protective Ensemble

At the present time tasks 1-5 will initially be performed in Level D PPE. Since the composition of likely petroleum hydrocarbons has not been identified, any MultiRAE reading of 5 ppm requires evacuation of work area. If work is to continue in that general work area, upgrading of PPE including use of respirators will be necessary. When cone penitrometry, geoprobing and soil sampling are performed some additional information on the site contaminants may be available (or become available as the result of analysis), the need to upgrade PPE is possible. Additional, compound specific monitoring may then be conducted resulting in a different action level.

Tasks: 1-		Tasks: 1-5 5 ppm TVOCs are greater		Tasks: 1-5	
Level B	☐	Level C	☒	Level D	☒
Barricade	☐	Barricade	☐	Barricade	☐
Saranex	☐	Saranex	☐	Saranex	☐
Tyvek	☐	Tyvek	☒	Tyvek*	☒
Other	☐	Other	☐	Other	☐
SCBA	☐	APR full-face	☒	Eye Protection	☒
Tetherline	☐	Cartridge P-100/OV/AG	☒	Booties (wet areas)	☐
Booties	☐	Booties	☐	Hard Hat**	☒
Surgicals	☐		☒	Surgicals (collecting samples)	☒
Gloves	☐	Work Gloves	☒	Work Gloves	☒
Over gloves	☐	Over gloves	☐	Escape Pack	☐
Hard Hat**	☒	Hard Hat**	☒	Steel Toe/Shank Boots	☒
Steel Toe/Shank	☐	Steel Toe/Shank Boots	☒	Chaps (snake concern)	☒
		Chaps (snake concern)	☒		

* Tyvek suits will be worn in proximity to excavating activities. This will not be necessary for the operator while in the enclosed cabin. Tyvek suits will also be worn if upgrade to Level C PPE is necessary.

** Hard hats are necessary when on ground in proximity to the excavator or any heavy equipment with attachments at face height or above.

Additional Protective Clothing:

Rain Gear	☒	Hard Hat Liner	☐	Splash Apron	☐
Fireman Boots	☐	Insulated Coveralls	☐	Splash Shied	☐

5.2 Justification of level of PPE Selected for each task.
The geophysics portion of the work is not invasive. The site clearance work will involve the use of a ground hog to clear tall grass and brush.

Some limited excavation work will be performed to confirm EM 31 readings. This work will be performed in ambient air with operator in an enclosed cab several feet away. If any odors are noted in the area or MultiRAE indicates 5 ppm or greater all personnel will evacuate area and contact EHS Manager and Task Leader to discuss project approach, i.e., need for monitoring equipment, possible upgrading of PPE, additional safety precautions. At present, personnel do not have capability to upgrade to Level C PPE due to lack of full-face air purifying respirators and proper cartridges onsite.

6.0 SITE AIR MONITORING PLAN (Tasks 2-5)

6.1 Instrument Calibration

Required Instrument	Calibration Date	Battery Check
☒MultiRAE 10.6 eV	Weekly	Daily

Other At present, no other air monitoring equipment is needed.

6.2 Person(s) Responsible for Monitoring:
Chris French- meets competency checkout requirements for MultiRAE.

6.3 Type of Monitoring:

Survey/Characterization	☒	Perimeter	☐
Work Zone	☒	Exposure/Breathing Zone	☒

6.4 Objective of Monitoring: Personal exposure assessment .

6.5 Action Levels: For Tasks 2-5 the work areas will be surveyed using the **MultiRAE** to confirm whether VOC concentrations are below the action level. **MultiRAE readings in excess of 5 ppm above background will require an upgrade to Level C.** If any 'unknown' or chemical odors are detected that may be a health risk the area must be evacuated, the work area must be re-assessed and the steps must be discussed with the SERAS EHS Manager prior to re-entry.

7.0 MEDICAL MONITORING

All personnel are current with respect to the Lockheed Martin medical monitoring program. Additionally, the current subcontractor for geophysics work (AMO) has provided all necessary paper work for medical clearance (and appropriate HAZWOPER training).

8.0 SITE CONTROL

8.1 Buddy system is required for all site work. No one will work alone onsite.

8.2 Site communications plan:

Radios	☐	Air horn	☐
Whistles	☐	Megaphone	☐
Cell phone	☒		

Hand Signals:

Signal:	Significance:
Hands clutching throat	Out of air/cannot breath
Hands on top of head	Need assistance
Thumbs up	OK/I'm alright/I understand
Thumbs down	No/negative
Arms waving upright	Send backup support
Grip partners wrist	Exit area immediately

8.3 Site Work Zones:

The Exclusion Zone is defined as the area within 10-feet of a new excavation in an area of potential contamination. "Contaminated areas" are difficult to define since extent of contamination sampling has not been performed onsite.

The Support Zone is situated in clean areas where the chance to encounter hazardous materials or conditions is minimal. Personal protective equipment is therefore not required.

8.4 Nearest Medical Assistance

Directions from the site to the hospital with map are provided at the end of the HASP as Attachment 3.

The following onsite personnel have current certification in CPR and/or First Aid (FA).

NAME	CPR Expiration Date	FA Expiration Date
Chris French	11/01/15	11/01/15

8.5 Standing Orders

Exclusion Zone

No smoking, eating, or drinking in this zone.

No horse play.

No matches or lighters in this zone.

Check-in on entrance to this zone.

Check-out on exit from this zone.

Implement the communications system.

Line of sight must be in position when appropriate.

Wear the appropriate level of protection as defined in the HASP.

9.0 DECONTAMINATION PLAN

Describe decontamination sequence for each level of protection to be used on-site.

Level D

Step 1 Remove Surgicals

Step 2 Wash hands and face

Step 3 Shower ASAP

Are personnel required to assist with decontamination? ☐ Yes ☒ No

Disposition of wastes generated during decontamination: At present, all waste generated will be disposed of onsite.

10.0 CONTINGENCY PLANNING

10.1 Identify location of the following during the site orientation and daily safety talk. (Indicate NA for items that are not applicable for the site.)

First Aid Kit In vehicle.	Eyewash In vehicle
Stretcher NA	Emergency Shower NA
Site Telephone 732 796-3247 717-649-5291	Mobile Phones 732 796-3247 (Chris French) 717-649-5291 (Beth Williams) (Check mobile phone reception onsite.)
Telephone Contact List See section 10.2 below.	Evacuation Routes: To be determined onsite.
SCBAs NA	Escape Packs NA

10.2 Emergency Contact/Notification System

The following list provides names and telephone numbers for emergency contact personnel.

Organization	**Notes**	**Telephone**
Bristow Medical Center 700 West 7th Avenue Bristow, Oklahoma	In an Emergency- call 911	(918) 367-2215

Stroud Regional Medical Center 2308 Oklahoma Route 66 West Stroud, Oklahoma 74079	Smaller medical center, further from site.	(918) 968-3571
St. Francis Hospital Tulsa, OK	Snake antivenom/antivenin, **please note that Bristow and Stroud Medical centers do not have snake antivenom/antivenin. Contact one of the above local hospitals first to arrange for movement to Tulsa.**	918 494-2200
Hillcrest Hospital South Tulsa, OK	Snake antivenom/antivenin, **please note that Bristow and Stroud Medical centers do not have snake antivenom/antivenin. Contact one of the above local hospitals first to arrange for movement to Tulsa.**	918 294-4000
Bristow, Oklahoma Police Department	In an Emergency, call 911	Police Chief (Wayne Williams) (918) 367-2251
Bristow Fire Department/Rescue Squad	In an Emergency, call 911	Fire Chief: David McSpadden Work - 918-367-3415

Poison Control Center	(800) 222-1222
EPA Region	214-665-8143
State Authority	(405) 402-5136
CHEMTREC	**(800) 424-9300**
TSCA HOTLINE	202 554-1404
RCRA HOTLINE	(800) 424-9346
CDC (Day)	404 452-4100
CDC (Night)	404 329-2888
Bureau of Alcohol, Tobacco & Firearms	(800) 424-9555, (202) 566-7777
Lockheed SERAS Office	732 321-4200
Federal Express- Hazardous Material Information	901 922-1666
Kevin Taylor, SERAS Program Manager	732 321-4202, Office 609 429-0605, Cell
Peter Harnett, SERAS Health & Safety Officer	732 494-4011, Office 732 306-3115, Cell 908 310-2127, Cell- preferred

10.3 Medical Emergencies

Any person who may be contaminated by chemical onsite needs to be decontaminated to the maximum extent possible. If the patient's condition is serious, at least partial decontamination should be completed (i.e., complete disrobing of the victim and redressing in clean coveralls or wrapping in a blanket.) First aid should be administered while awaiting an ambulance or paramedics.

Any person being transported to a clinic or hospital for treatment should take with them information on the chemical(s) they have been exposed to at the site. This information is included in Section 3.0 of this plan. Map with directions to the hospital can be found as Attachment 3. Please see additional considerations for snake bites in 10.2 and Attachment 4.

10.4 Fire or Explosion

In the event of a fire or explosion, the local fire department should be summoned immediately. Upon their arrival, the designated personnel will advise the fire commander of the location, nature, and identification of the hazardous materials onsite.

If it is safe to do so, site personnel may:

- Use firefighting equipment available onsite to control or extinguish the fire; and,
- Remove or isolate flammable or other hazardous materials which may contribute to the fire

The brush hog and the excavator will each have 10-pound ABC fire extinguishers and the two Gators will be equipped with 5-pound ABC fire extinguishers. As of September 13, 2015, there are no Governor or County burn bans in Creek County where the Wilcox site is located. The presence of the fire extinguishers on vehicles remains important due to past petrochemical activity onsite and potential when moving equipment to disturb abandoned product and/or metal objects on or immediately below surface.

10.5 Spill or Leaks

In the event of a spill or a leak, site personnel will:

- Inform their supervisor immediately;
- Locate the source of the spillage and stop the flow if it can be done safely; and,
- Begin containment and recovery of the spilled materials with sorbent (vermiculate, etc.).

11.0 CONFINED SPACE

No confined space entry expected.

Wilcox Refinery & Tank Farm Site
Bristow, OK
HASP revised September 14, 2015 to address additional tasks beyond initial site walkthrough.

12.0 ACKNOWLEDGMENT

Note: Return to HSO shortly after returning from field. The signed HASP or HASP MOD is then posted.

I have read understood, and agreed with the information set forth in this Health and Safety Plan and will adhere to the protocols specified herein.

Organization/Position	Printed Name	Signature	Date
EPA ERT Work Assignment Manager	Tom Krolak		9/14/15
SERAS Task Leader/Field Supervisor	CHRIS FRENCH		9/14/15
EPA	George Prince		9/15/15
SERAS Site Safety Coordinator	CHRIS FRENCH		9/19/15
Field Team Member	JPalicastri		9-19-15
Field Team Member			

FOR NICK CEUSER

SUBCONTRACTORS

Subcontractor Company	Printed Name	Signature	Date
AMO	Beth Williams		9/15/15
AMO	Michael Palkendo		9/15/15
AMO	Shawn Kieffer		9/15/15
DYNAMAC	KARAJ BERECZ		09/19/15
AMO			

ATTACHMENT 1- DIRECTIONS TO SITE FROM HOTEL

mapquest

Trip to:
[31985 - 32099] E0810 Rd
Bristow, OK 74010
42.62 miles / 45 minutes

Notes

	4900 W Madison Pl, Albuquerque, OK 74012	Download Free App
	1. Start out going **west** on **W Kenosha St** toward **S Garnett Rd**. Map	**0.01 Mi** *0.01 Mi Total*
	2. **W Kenosha St** becomes **E 71st St**. Map	**0.5 Mi** *0.5 Mi Total*
EAST 64	3. Merge onto **US-64 E / US-169 S / Mingo Valley Expy S** via the ramp on the **left**. Map	**3.3 Mi** *3.8 Mi Total*
WEST 364	4. Stay **straight** to go onto **OK-364 W / Creek Tpke W** (Portions toll). Map	**6.1 Mi** *9.9 Mi Total*
	5. Keep **right** at the fork to go on **Creek Tpke W** (Portions toll). Map	**6.7 Mi** *16.7 Mi Total*
WEST 44	6. Merge onto **I-44 W / Turner Tpke W** via the exit on the **left** (Portions toll). Map	**20.7 Mi** *37.4 Mi Total*
196 EXIT	7. Take the **OK-48** exit, **EXIT 196**, toward **Bristow / Lake Keystone**. Map	**0.6 Mi** *38.0 Mi Total*
	8. Keep **left** at the fork in the ramp. Map	**0.02 Mi** *38.0 Mi Total*
48	9. Turn **left** onto **Historic Route 66 / OK-48 / OK-66**. Continue to follow **OK-48**. Map	**1.3 Mi** *39.3 Mi Total*
16	10. Turn **left** onto **E 1st Ave / OK-48 / OK-16**. Continue to follow **OK-16**. Map	**1.7 Mi** *41.1 Mi Total*
	11. Turn **left** onto **S 329Th West Ave**. Map	**0.6 Mi** *41.7 Mi Total*
	12. Take the 1st **right** onto **W 225th St S**. Map	**0.5 Mi** *42.2 Mi Total*
	13. Turn **left** onto **S 321st West Ave** (Portions unpaved). Map	**0.4 Mi** *42.6 Mi Total*
	14. Turn **right** onto **W 221st St S** (Portions unpaved). Map	**0.05 Mi** *42.6 Mi Total*

15. [31985 - 32099] E0810 RD. Map

[31985 - 32099] E0810 Rd, Bristow, OK 74010

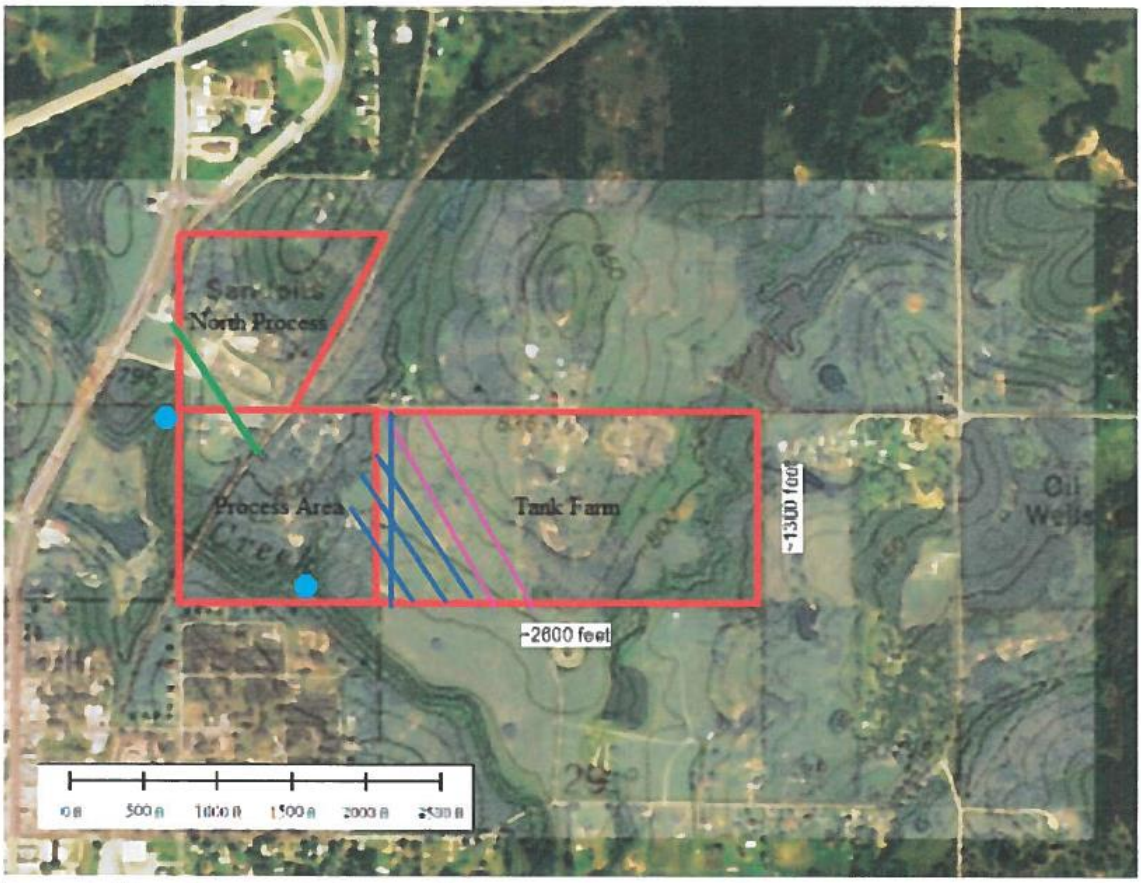
Total Travel Estimate: **42.62 miles - about 45 minutes**

ATTACHMENT 2- SITE MAPS

Wilcox

Location of the Wilcox Oil Company Site.

DigitalGlobe, GeoEye, Microsoft, USDA FSA, CNES/Airbus DS | Esri, HERE



Suggested lines to concentrate on to determine pathway from source area to seep.

1500 feet long traverse

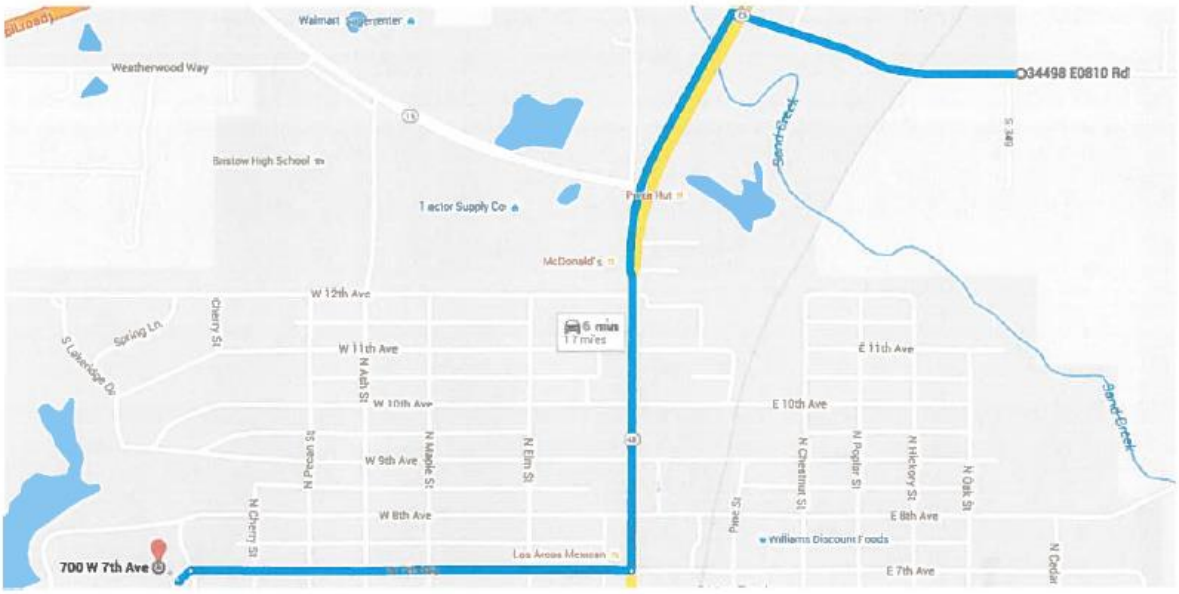
Shorter than 1500 feet

Location of Seeps

May be possible in the process area to investigate the seep

ATTACHMENT 3- DIRECTIONS AND MAP TO BRISTOW MEDICAL CENTER FROM SITE

Directions from 34498 E0810 Rd to 700 W 7th Ave



34498 E0810 Rd
Bristow, OK 74010

1. Head west on E0810 Rd toward S 349 — 0.4 mi
2. Turn left onto Rte 66 — 0.7 mi
3. Turn right onto W 7th Ave — 0.5 mi
4. Slight left to stay on W 7th Ave — 108 ft

Destination will be on the right

700 W 7th Ave
Bristow, OK 74010

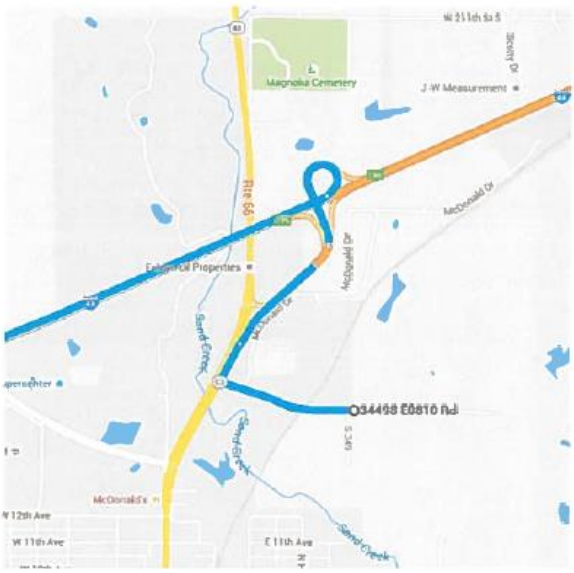
Directions from 34498 E0810 Rd to 2308 Oklahoma 66

34498 E0810 Rd
Bristow, OK 74010

Get on I-44/Turner Turnpike from E0810 Rd

1.2 mi / 3 min

1. Head west on E0810 Rd toward S 349
   0.4 mi
2. Turn right onto Rte 66
   0.1 mi
3. Use the right lane to take the Interstate 44 ramp to Turner Turnpike
   ⚠ Toll road
   0.3 mi
4. Keep left at the fork, follow signs for Oklahoma City/I-44 W and merge onto I-44/Turner Turnpike



Follow I-44/Turner Turnpike to US-377 S in Stroud. Take exit 179 from I-44/Turner Turnpike

17.4 mi / 15 min

5. Merge onto I-44/Turner Turnpike
   Toll road
   17.1 mi

6. Take exit 179 for OK-99 toward Drumright/Stroud
   Toll road
   0.3 mi

Follow US-377 S to Rte 66

1.9 mi / 6 min

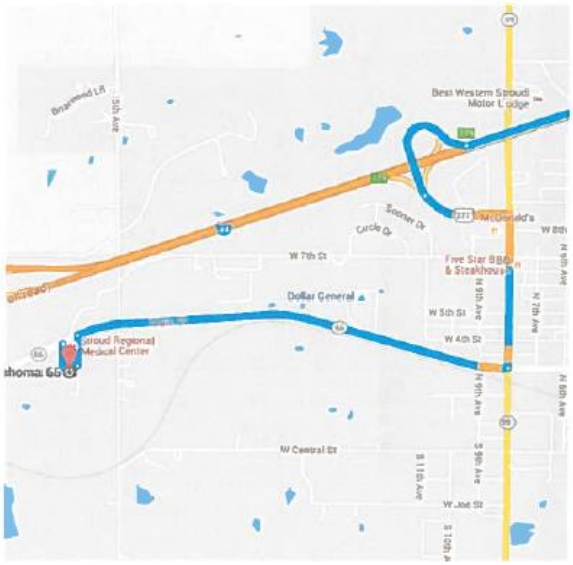
7. Continue onto US-377 S
   Partial toll road
   0.6 mi

8. Turn right onto 3rd St/W Main St/Rte 66
   Continue to follow Rte 66
   1.1 mi

9. Turn left toward Rte 66
   423 ft

10. Turn right toward Rte 66
    0.1 mi

11. Turn right onto Rte 66
    Destination will be on the right
    0.0 mi



2308 Oklahoma 66
Stroud, OK 74079

ATTACHMENT 4- MOST COMMON POISONOUS SNAKE SPECIES IN BRISTOW, OKLAHOMA AREA (BASED ON DISCUSSION WITH LOCAL HOSPITAL EMERGENCY ROOMS)

Cotton Mouth (Water moccasin)

The Water Moccasin (also known as the Cottonmouth) is closely related to the Copperhead, and they are often found in the same geographical ranges. The Water Moccasin, however, is much more dependent on an available water source where it can catch food such as fish and frogs. They are typically darker in color and more muted in pattern than the Copperhead, but young Cottonmouths are sharply patterned, but lose much of their contrasting pattern as they age.

Copperhead

Copperheads are fairly common in certain parts of the country, and because of their large geographic range, account for a fairly large percentage of venomous bites each year, The Copperhead bite is very rarely life-threatening when proper medical treatment is administered. Their venom is relatively weak compared to many other US native venomous snakes.

Copperheads are generally identified as a medium-sized snake with an alternating pattern of tan bands separated by darker brown or rust-colored, hourglass-shaped crossbands. There are a handful of subspecies in the Copperhead family that can show slightly different coloration.

Pygmy rattlesnake, coloration will vary with background

Note color variation, rattler evident at end of tail on second rattler.
The pygmy rattlesnake is one of thirty-six known species of rattlesnakes. Rattlesnake bites are the leading cause of snakebite injuries in North America. Rattlesnakes rarely bite unless provoked or threatened; if treated promptly, the bites are rarely fatal. All rattlesnakes are pit vipers and can sense heat nearby.